



*Supplement of*

## **Investigations on the significance of a storage facility for high-level radioactive waste for the siting region**

**Julia Mareike Neles and Florian Krob**

*Correspondence to:* Julia Mareike Neles ([j.neles@oeko.de](mailto:j.neles@oeko.de))

The copyright of individual parts of the supplement might differ from the article licence.

# STORAGE AND REGION

## Investigations on the impact of a storage facility for high-level radioactive waste for the siting region

### Initial Situation

In Germany, spent fuel is stored in twelve facilities at the respective nuclear power plant (NPP) sites and in four other storage facilities. While the NPPs are currently being decommissioned, the storage facilities will remain at the sites for much longer depending on the commissioning of a high-level waste repository.

Storage periods of up to 120 years are currently being discussed.

In this context the project "storage and region" investigated the question of the current and future economic and social impact of the storage facility for the respective siting region.



Storage at the Brokdorf site (STEAG concept) © BGZ/Christopher Mick



Storage at Gundremmingen site (WTI concept) © BGZ/Christopher Mick

### Research Approach

The investigations focused on two storage sites with NPPs in decommissioning. The storages in Brokdorf and Gundremmingen were selected on the basis of the two most commonly implemented construction concepts in Germany.

Data for the project was collected through

- guided interviews with actors from politics, business and the critical public
- desk research of relevant literature
- participant observation of various events related to storage.

In addition, the economic, social, and environmental studies carried out in Switzerland as part of the sectoral plan procedure for deep geological repositories were examined with regard to the methods used and transferable results.

## Results and Need for Research

#### Economic situation of the siting region

The economic situation in the example regions was considered to be stable in the short and medium term, even after shutdown of the NPPs. The storage facility itself was not seen as contributing to economic development. However, it was also not seen as an obstacle to future development, which is more likely to be seen in the commercial-industrial sector. The monitoring in Switzerland showed that the siting regions had not experienced any negative development in terms of population growth, employment, or real estate prices.

#### Relevant aspects of the dimension economy and society

- Migration balance
- Demography
- Future opportunities
- Structural change, especially relocation of the energy industry
- Storage facility as crystallisation point for development

#### Perception of safety

The storage facility was perceived as safe by respondents at both sites. However, questions remained, such as why different construction concepts were chosen or how the ageing of the casks and inventory should be addressed in the future. These are questions that are also repeatedly asked at events. Moving the waste to a different, e.g., central storage facility was not an issue. However, most of the data collection took place before the BGE schedules for the site selection process were announced end of 2022.

#### Relevant aspects of the dimension perception of safety

- Autonomous storage operation (organisation and changes)
- Construction concepts and retrofits
- Assessment of cask functions and repair concepts
- Concepts for future risks (climate change, unfavourable political and social conditions)
- Confidence in the operator
- Flexibility in future adaptations

#### Procedural design of future licensing processes

For the procedural design of future licensing procedures, the respondents in the sample regions expect extensive public participation. Difficulties in accessing to information, which have occurred in previous licensing processes, should not be repeated. However, it was also discussed that the interest in storage in the region is rather low. An information gap was identified between the siting community and the surrounding area, but also between NGOs and the public.

#### Relevant aspects of the dimension procedural design

- Appreciation for taking responsibility
- Learning from public participation in licensing processes
- Consideration of challenges and barriers
- Public information and participation measures
- Evaluation of response
- Value of the licensing process (procedural fairness)

#### Evaluation approach

Based on these results, a first evaluation approach was developed to investigate the impact of the spent fuel storage facility for the respective region. Descriptive characteristics were assigned to the three dimensions identified: economy and society, perception of safety and procedural design. The main aspects are listed below. In the final report these were underpinned with indicators and concrete questions for operationalisation. However, questions still remain open.

#### Need for research

- Measures to support structural development
- Impact of updated timeline of site selection process on perceptions of safety
- Preparatory measures for public participation in the relicensing process
- Size of the siting region

## Reference

Neles, J., Krob, Dr. F., Mbah, Dr. M.: Zwischenlager und Region - Entwicklung eines methodischen Bewertungsansatzes zur Analyse der Einflussfaktoren und der Bedeutung eines Zwischenlagers für abgebrannte Brennelemente für eine Region

Weiterentwicklung des Standes von Wissenschaft und Technik bei der Sicherheit der Behandlung bestrahlter Brennelemente, Wärme entwickelnder radioaktiver Abfälle und radioaktiver Abfälle mit vernachlässigbarer Wärmeentwicklung, 2023

(in publication)

Funded by the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection

(grant number 4720E03366)



Bundesministerium für Umwelt, Naturschutz, nukleare Sicherheit und Verbraucherschutz

## Contact

#### Julia Mareike Neles

Division  
Nuclear Engineering & Facility Safety  
Öko-Institut e. V., Darmstadt  
Telefon: +49 (0) 6151 8191-0  
E-Mail: j.neles@oeko.de

#### Dr. Florian Krob

Division  
Nuclear Engineering & Facility Safety  
Öko-Institut e. V., Darmstadt  
Telefon: +49 (0) 6151 8191-0  
E-Mail: f.krob@oeko.de

„Es sind so viele Teilinformationen, die nur die Fachebene oder die Enthusiasten durchschauen“

[There are so many pieces of information that only the technical level or enthusiasts can see through]

Quote from an interview partner